

and his monograph gives a rich background upon which someone can attack the apparently open issue of Antillean biogeography and Hackberry Butterflies.—*Kurt Johnson, Department of Entomology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024.*

Behavior

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Evolutionary Genetics of Invertebrate Behavior.—M. D. Huettel (ed.). 1986. Plenum Press, New York, ix + 335 pp. \$59.50.

Mayr (1963) has argued that evolutionary transitions to new niches or adaptive zones are generally initiated by changes in behavior. Given this and the bewildering diversity of invertebrates, both in terms of species numbers and ecological niches occupied, studies of the genetics of their behavior should contribute substantially to our understanding of the biological world. The present volume brings attention to the potential importance of such studies and, I hope, will serve to attract more students into this field. It comprises 30 chapters contributed by well-known figures in the fields of behavioral genetics and evolutionary ecology. The general areas covered include: (1) genetic variation in natural populations for courtship and mating, oviposition behavior, non-reproductive interactions among conspecifics, and life history traits; (2) molecular and biochemical genetics of behavior; and (3) some theoretical considerations of the role of behavior on evolution and speciation. Thus, a lot of important ground is covered.

Unfortunately, this volume has some serious shortcomings. First, it is quite narrowly focused with respect to the organisms and topics covered. All of the empirical chapters except one, which considers egg laying behavior in *Aplysia*, are concerned with insects and spiders, and 10 of these deal with *Drosophila*. A number of important topics, such as dispersal polymorphisms, insect social behavior, kin recognition, and general habitat selection, are not covered.

A second problem is that the book was out of date by the time it was published. This volume is the outcome of a meeting that was held in March of 1983, yet the proceedings were not published until 1986. Only three of the chapters included references to papers that appeared after 1984, and one refers to a paper that actually came out in 1983 as “in press.”

Other oddities include chapters that do not deal with or mention behavior, such as that by Scriber et al. on color polymorphism in tiger swallowtails and that by Slatkin and Kirkpatrick on the general use of quantitative genetics for evolutionary studies, and a reference by Carde to “Teal et al. (this volume),” a non-existent chapter.

Finally, the quality of the science in many studies of the evolutionary genetics of behavior, including some in this volume, leaves something to be desired. The most serious problems are lack of true replication of experiments, and making genetic interpretations based on small sample sizes without taking into consideration the power of statistical tests used. For instance, suppose one crosses two interfertile species and then backcrosses the hybrids to one of the parents. If, in the backcross

progeny, 7 resemble the hybrid and 12 resemble the parental species, this is not strong evidence for monogenic control of the trait being considered, even though the numbers obtained do not differ significantly from a 1:1 ratio. Similarly, an observed genetic correlation between two traits of -0.29 ± 0.28 , which is not significantly different from zero, does not necessarily mean that the correlation is actually zero and that the two traits can evolve independently.

Despite these complaints, this collection should be perused by evolutionary biologists who are interested in any aspect of behavior. Those who do are likely to find that one of the variety of approaches employed by the contributors, from mosaic analysis to quantitative genetics, may be particularly suitable for studies of their own favorite organisms.—*John Jaenike, Department of Biology, University of Rochester, Rochester, New York 14627.*

LITERATURE CITED

Mayr, E. 1963. *Animal Species and Evolution*. Harvard University Press, Cambridge, Massachusetts.

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Perspectives in Chemoreception and Behavior.—R. F. Chapman, E. A. Bernays and J. G. Stoffolano, Jr. (eds.). 1987. Springer-Verlag, New York, New York, 206 pp. \$59.00.

Vincent Dethier is well known as one of the foremost investigators in the area of insect behavior and chemoreception. This volume is the result of a symposium held in honor of his 70th birthday, at the University of Massachusetts, Amherst, in May 1985. Papers by his colleagues and collaborators address the diverse areas of investigation to which Dr. Dethier has made fundamental contributions during his career.

L. M. Schoonhoven's chapter describes the chemosensory equipment of caterpillars and provides a comprehensive, current review of the search for an understanding of the sensory code, which translates the responses of a caterpillar's small number of chemoreceptors into host-specific feeding behaviors. F. E. Hanson describes the structure and neurophysiology of the contact chemosensory hair of muscoid flies (*Phormia* spp. and *Calliphora* spp.). Hanson's chapter emphasizes current theories of the mechanisms of taste stimulation for the four dendrites found in the hair and also includes speculation about a sensory code in these flies. T. Jermy provides a brief, clear review of our knowledge of feeding preference induction, oviposition preference induction, sensory and CNS-based habituation and food aversion learning in phytophagous insects. A short chapter by A. Gelperin contributes to this theme with interesting recent information on associative learning in the blowfly (*Phormia*), and the methods of its investigation.

Other chapters on insect/plant interaction include D. Schneider's description of the fascinating physiological and ecological relationships between certain danaids and arctiids and the pyrrolizidine alkaloids of their host plants. R. F. Chapman and E. A. Bernays present a well developed argument for viewing the evolution of insect aversion to certain plant secondary compounds as driven by a variety of ecological